

## CLAIMS

1. A shape-memory resin having a glass transition temperature (T<sub>g</sub>) within the range of 40°C to 200°C and cross-linked by a thermo-reversible reaction in which a covalent bond is formed by cooling and dissociated by heating, wherein a dissociation temperature (T<sub>d</sub>) of the  
5 thermo-reversible reaction is 50°C to 300°C and satisfying the relationship:  $T_g + 10^\circ\text{C} \leq T_d$ ; and a deforming temperature at shape memorizing and shape recovering is not less than T<sub>g</sub> and less than T<sub>d</sub>.
2. The shape-memory resin according to claim 1, wherein the thermo-reversible reaction is at least one type of reaction selected from the group consisting of Diels-Alder reaction, nitroso dimerization reaction, acid anhydride esterification reaction, urethanization reaction, azlactone-  
5 hydroxyaryl reaction and carboxyl-alkenyloxy reaction.
3. The shape-memory resin according to claim 1 or 2, wherein the resin is remoldable at a temperature of T<sub>d</sub> to less than the decomposition temperature of the resin.
4. The shape-memory resin according to any one of claims 1 to 3, wherein the resin is biodegradable.
5. The shape-memory resin according to claim 4, wherein the resin is composed of a biomass-derived resin as a raw material.
6. The shape-memory resin according to claim 5, wherein the

resin is composed of polylactic acid as a raw material.

7. The shape-memory resin according to claim 6, wherein the resin is a cross-linked product of polylactic acid in a cool state obtained through the Diels-Alder reaction.

8. The shape-memory resin according to claim 6, wherein the resin is a cross-linked product of polylactic acid in a cool state obtained through a carboxyl-alkenyloxy reaction.

9. The shape-memory resin according to any one of claims 1 to 8, wherein the resin has a T<sub>g</sub> of 40°C to 100°C.

10. The shape-memory resin according to any one of claims 1 to 9, wherein the resin in a cool state has a crosslink density of 0.0001 to 1.

11. A molded product composed of a cross-linked product of the shape-memory resin according to any one of claims 1 to 10.

12. A molded product obtained by molding the cross-linked product of the shape-memory resin according to any one of claims 1 to 10 into a predetermined shape to be memorized at a temperature from T<sub>d</sub> to less than the decomposition temperature of the resin, deforming the molded product obtained at a temperature from T<sub>g</sub> to less than T<sub>d</sub>, and cooling the deformed product to a temperature less than T<sub>g</sub>, thereby fixing a deformed shape.

13. A method of using a molded product of a shape-memory resin wherein the molded product according to claim 12 is heated at a temperature of  $T_g$  to less than  $T_d$ , thereby recovering a predetermined original shape memorized.

14. A method of remolding a molded product of a shape-memory resin wherein the molded product according to claim 11 or 12 is melted at a temperature of  $T_d$  to less than the decomposition temperature of the resin.